OIPE SC156
SEP 0 9 2004
PATENT & TRADEMARK OFFICE

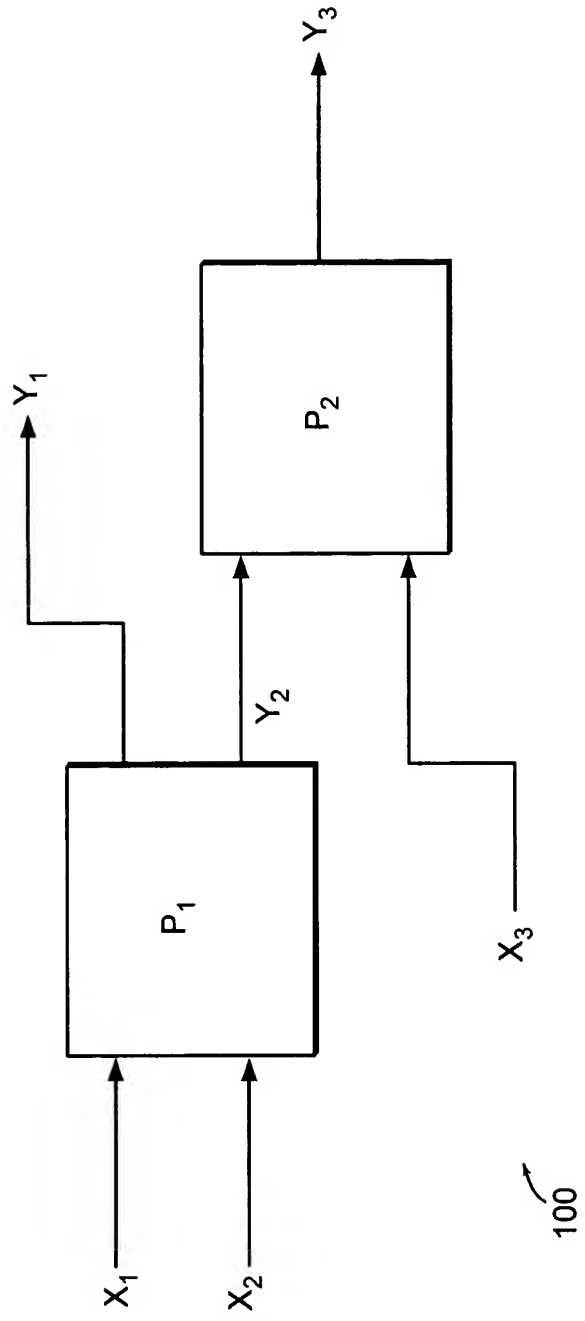

FIG. 1

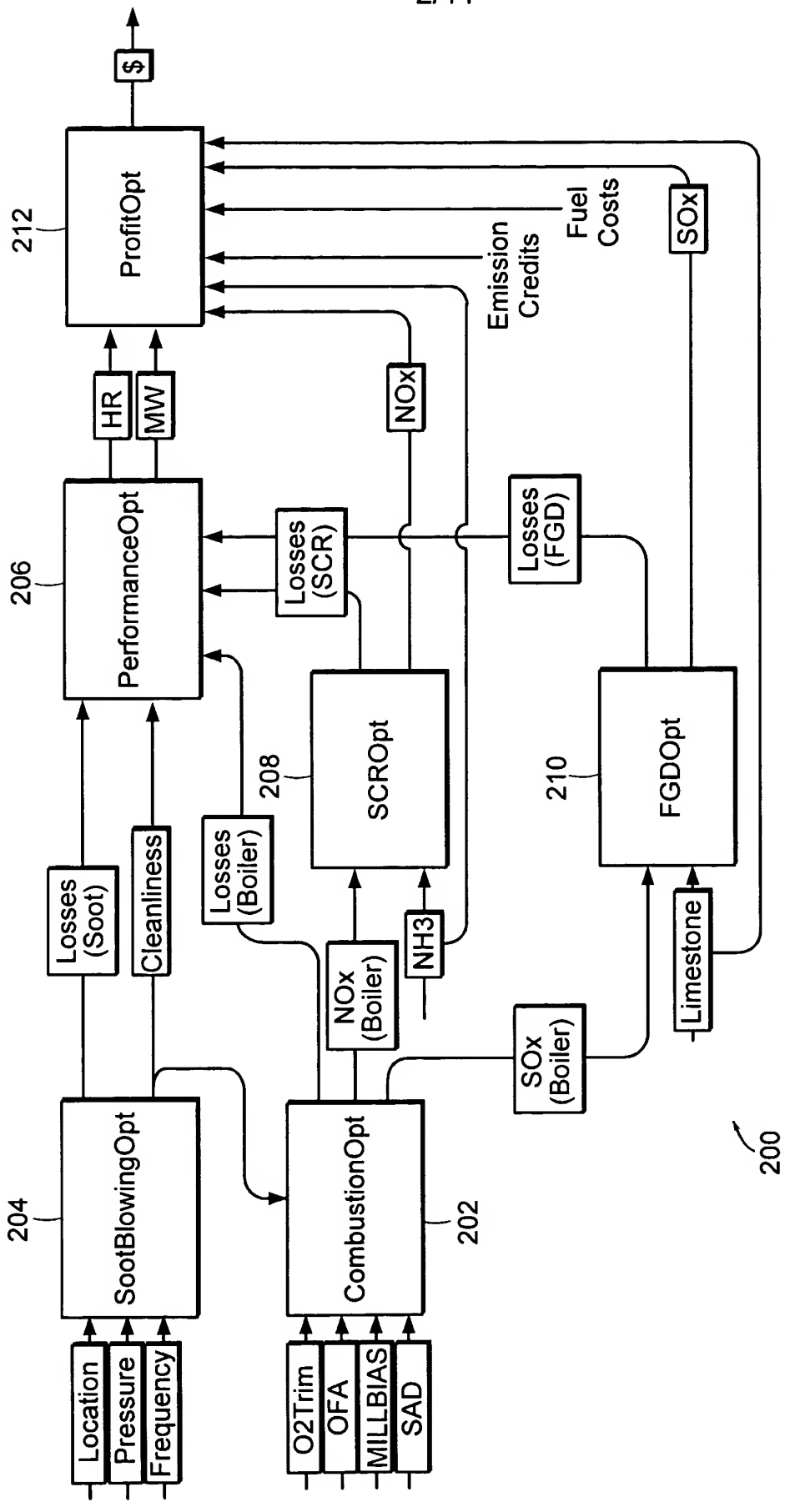
$
ProfitOpt
212
HR
MW
NOx
Emission Credits
Fuel Costs
SOx
PerformanceOpt
206
Losses (SCR)
Losses (FGD)
Losses (Soot)
Cleanliness
Losses (Boiler)
SCROpt
208
FGDOpt
210
NOx (Boiler)
NH3
SOx (Boiler)
Limestone
SootBlowingOpt
204
CombustionOpt
202
Location
Pressure
Frequency
O2Trim
OFA
MILLBIAS
SAD
200

FIG. 2

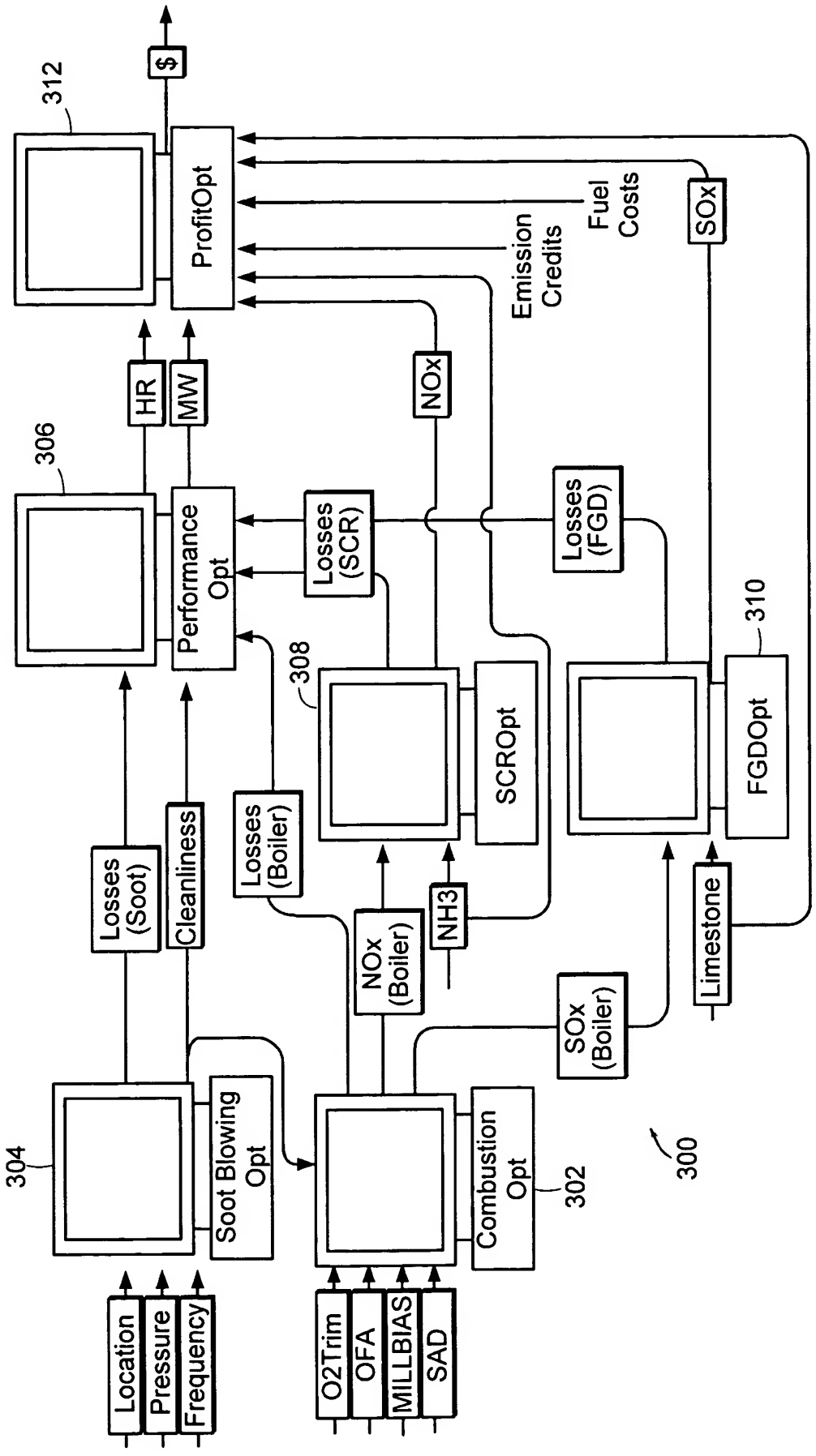
$
312
ProfitOpt
Emission Credits
Fuel Costs
SOx
HR
MW
NOx
306
Performance Opt
Losses (SCR)
Losses (FGD)
308
SCROpt
310
FGDOpt
Losses (Soot)
Cleanliness
Losses (Boiler)
NOx (Boiler)
NH3
SOx (Boiler)
Limestone
304
Soot Blowing Opt
302
Combustion Opt
300
Location
Pressure
Frequency
O2Trim
OFA
MILLBIAS
SAD

FIG. 3

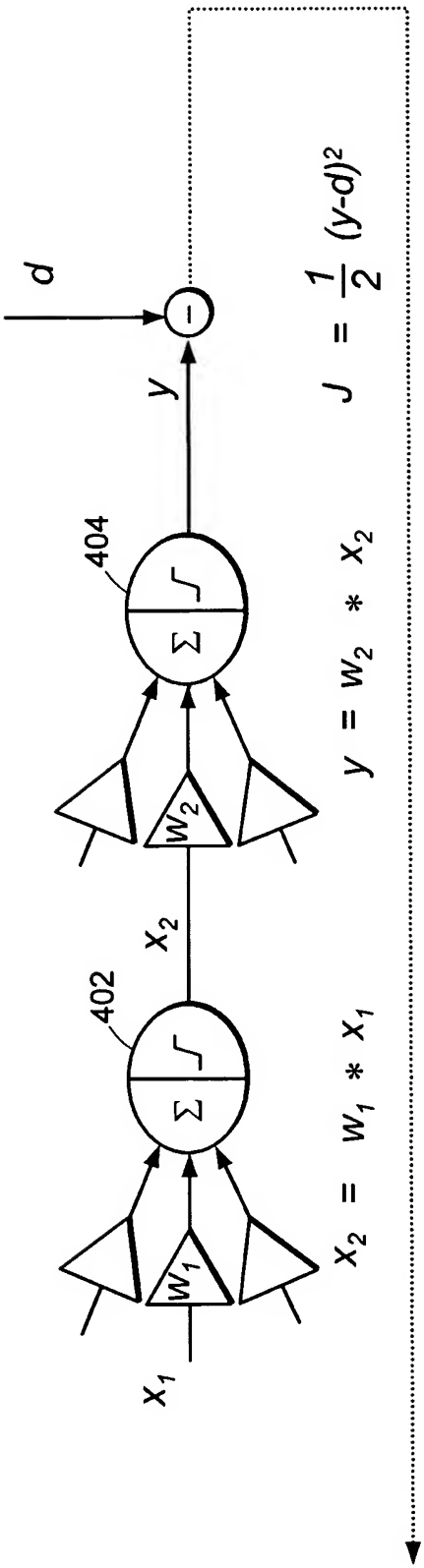
d
y
404
402
x_2
w_2
w_1
x_1
$x_2 = w_1 * x_1$
$y = w_2 * x_2$
$J = \frac{1}{2}(y-d)^2$
$\frac{\partial J}{\partial w_1} = \frac{\partial J}{\partial x_2} * \frac{\partial x_2}{\partial w_1}$
$= x_1 * w_2 * \varepsilon$
$\frac{\partial J}{\partial x_2} = \frac{\partial J}{\partial y} * \frac{\partial y}{\partial x_2}$
$= w_2 * \varepsilon$
$\frac{\partial J}{\partial w_2} = \frac{\partial J}{\partial y} * \frac{\partial y}{\partial w_2}$
$= X_2 * \varepsilon$
$\frac{\partial J}{\partial y} = y-d$
$\equiv \varepsilon$
400

FIG. 4

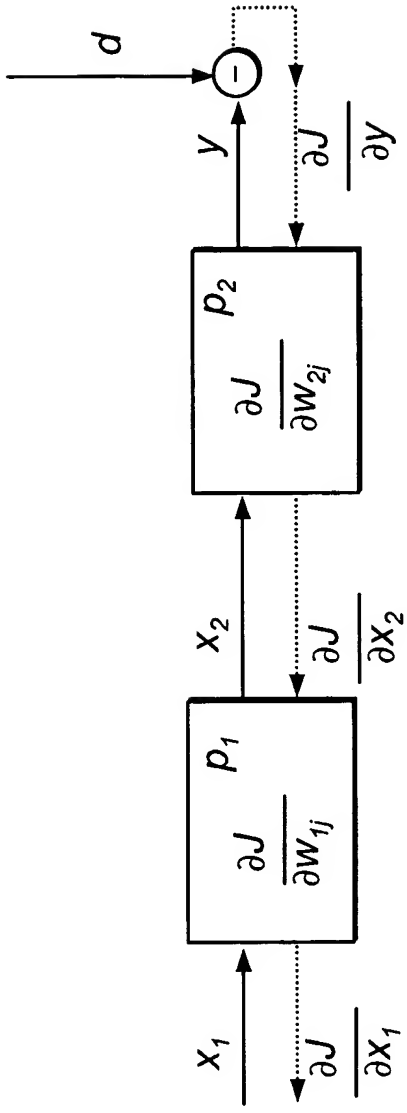
d
y
$\frac{\partial J}{\partial y}$
p_2
$\frac{\partial J}{\partial w_{2j}}$
x_2
$\frac{\partial J}{\partial x_2}$
p_1
$\frac{\partial J}{\partial w_{1j}}$
x_1
$\frac{\partial J}{\partial x_1}$
500

FIG. 5

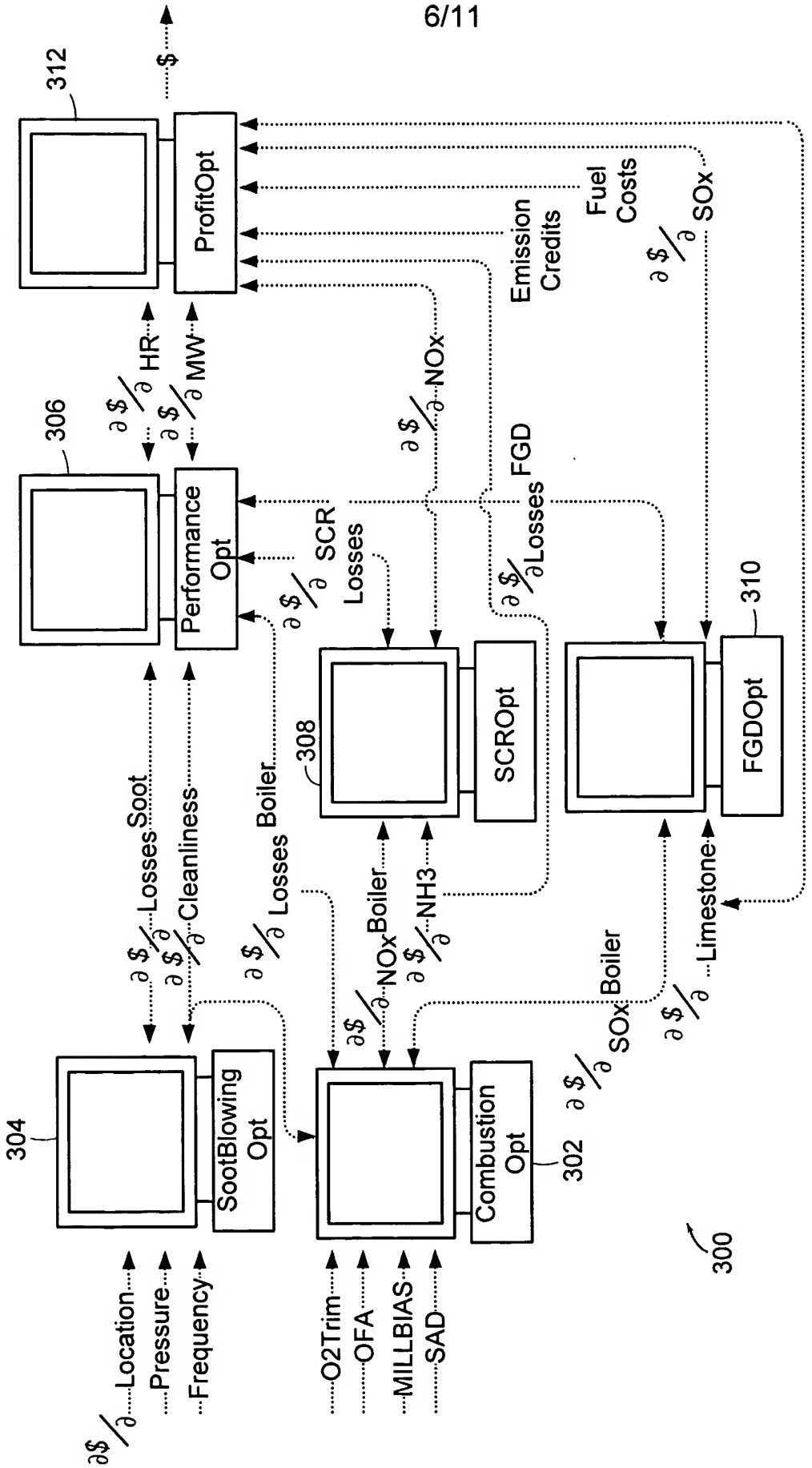
312
$
ProfitOpt
306
Performance Opt
∂$/∂HR
∂$/∂MW
∂$/∂NOx
Emission Credits
Fuel Costs
∂$/∂SOx
FGD
∂$/∂Losses
∂$/∂SCR Losses
308
SCROpt
310
FGDOpt
304
SootBlowing Opt
302
Combustion Opt
∂$/∂Losses Soot
∂$/∂Cleanliness
∂$/∂Losses Boiler
∂$/∂NOx Boiler
∂$/∂NH3
∂$/∂SOx Boiler
∂$/∂Limestone
∂$/∂Location
Pressure
Frequency
O2Trim
OFA
MILLBIAS
SAD
300

FIG. 6

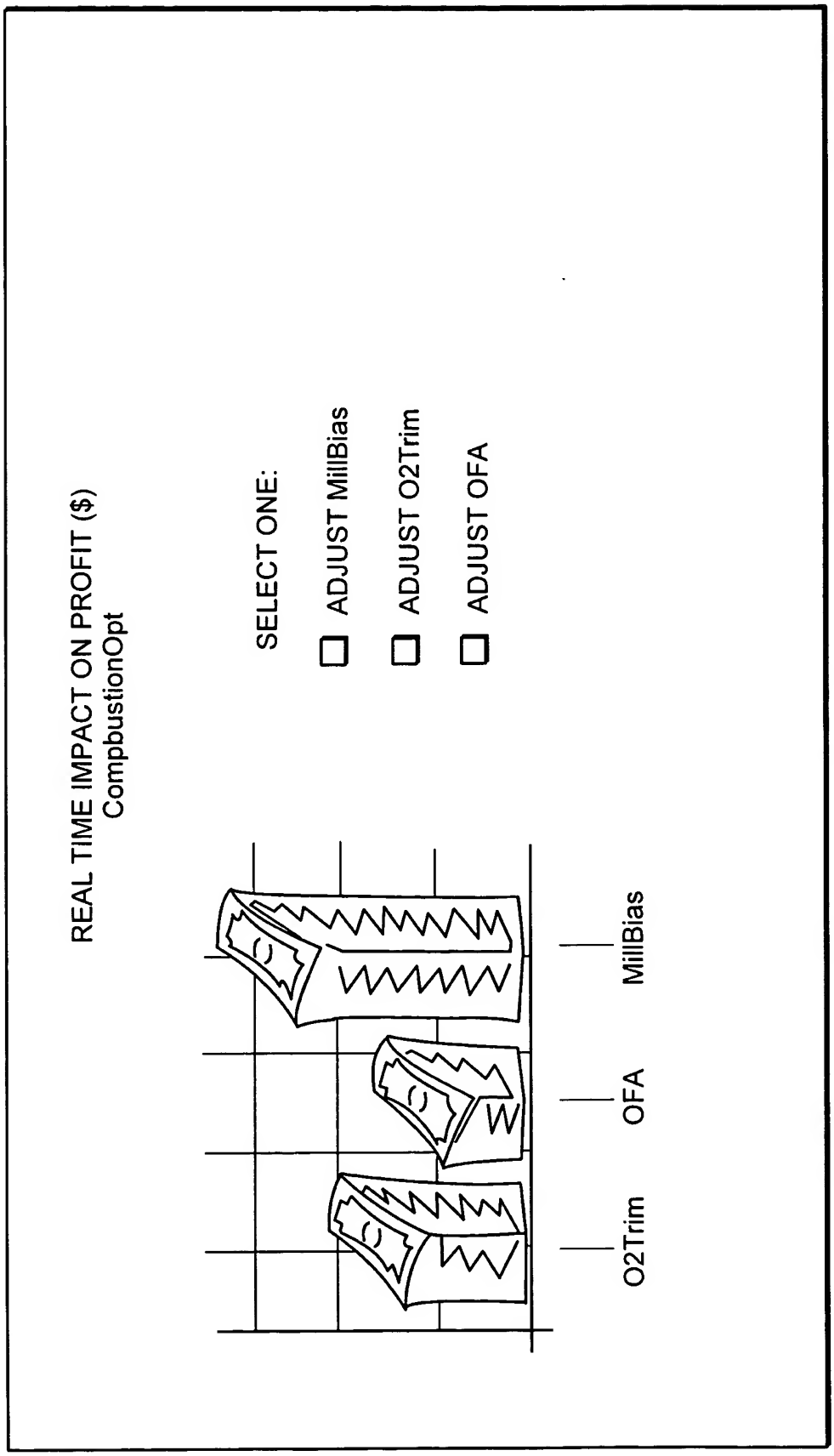
REAL TIME IMPACT ON PROFIT ($)
CompbustionOpt
SELECT ONE:
ADJUST MillBias
ADJUST O2Trim
ADJUST OFA
O2Trim
OFA
MillBias
700

FIG. 7

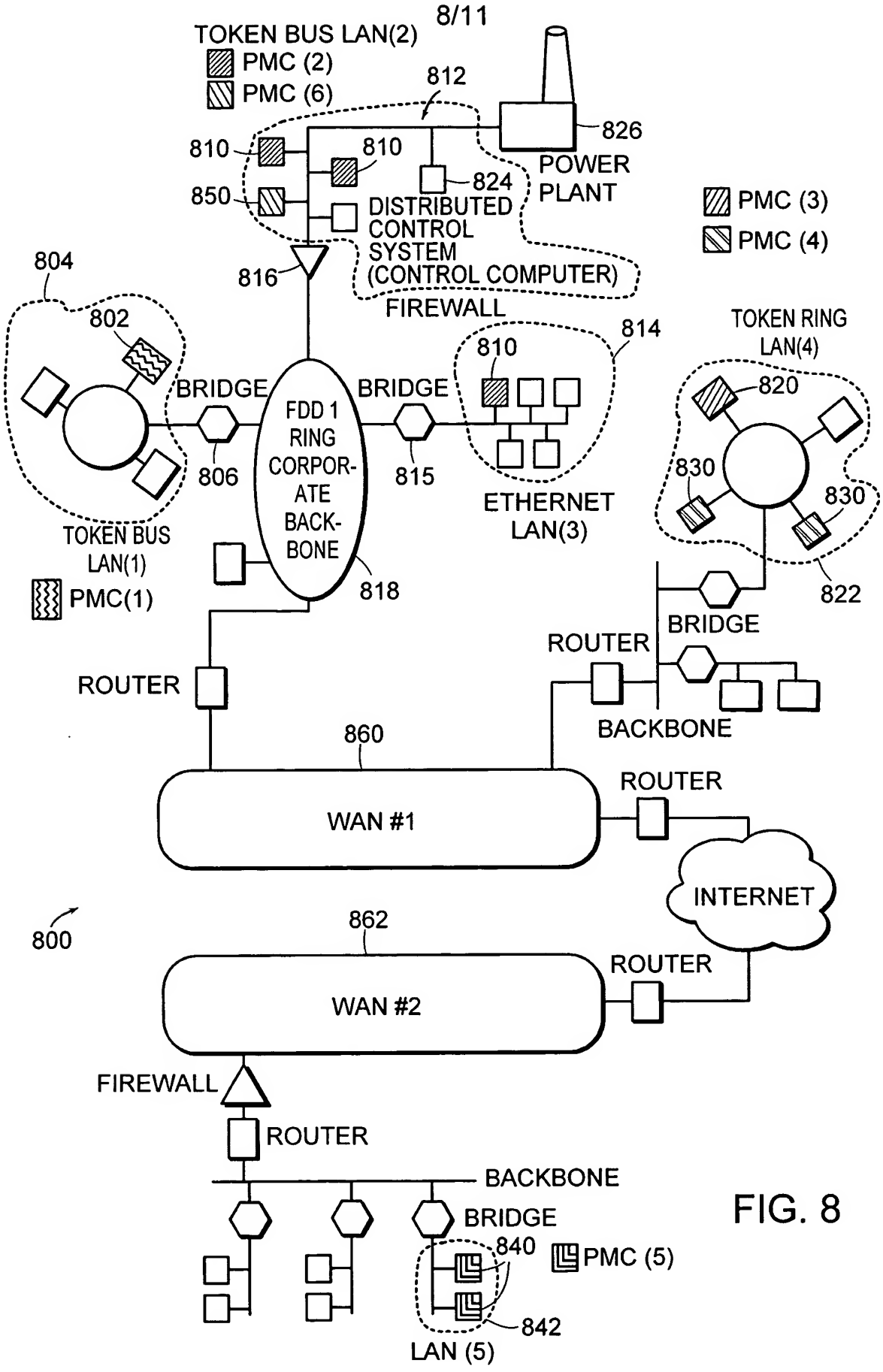
TOKEN BUS LAN(2)
PMC (2)
PMC (6)
812
826
POWER PLANT
810
810
824
850
DISTRIBUTED CONTROL SYSTEM (CONTROL COMPUTER)
816
FIREWALL
PMC (3)
PMC (4)
804
802
BRIDGE
FDD 1 RING CORPOR-ATE BACK-BONE
BRIDGE
806
815
810
814
ETHERNET LAN(3)
TOKEN RING LAN(4)
820
830
830
822
TOKEN BUS LAN(1)
PMC(1)
818
BRIDGE
ROUTER
ROUTER
BACKBONE
860
ROUTER
WAN #1
INTERNET
800
862
ROUTER
WAN #2
FIREWALL
ROUTER
BACKBONE
BRIDGE
840
PMC (5)
842
LAN (5)

FIG. 8

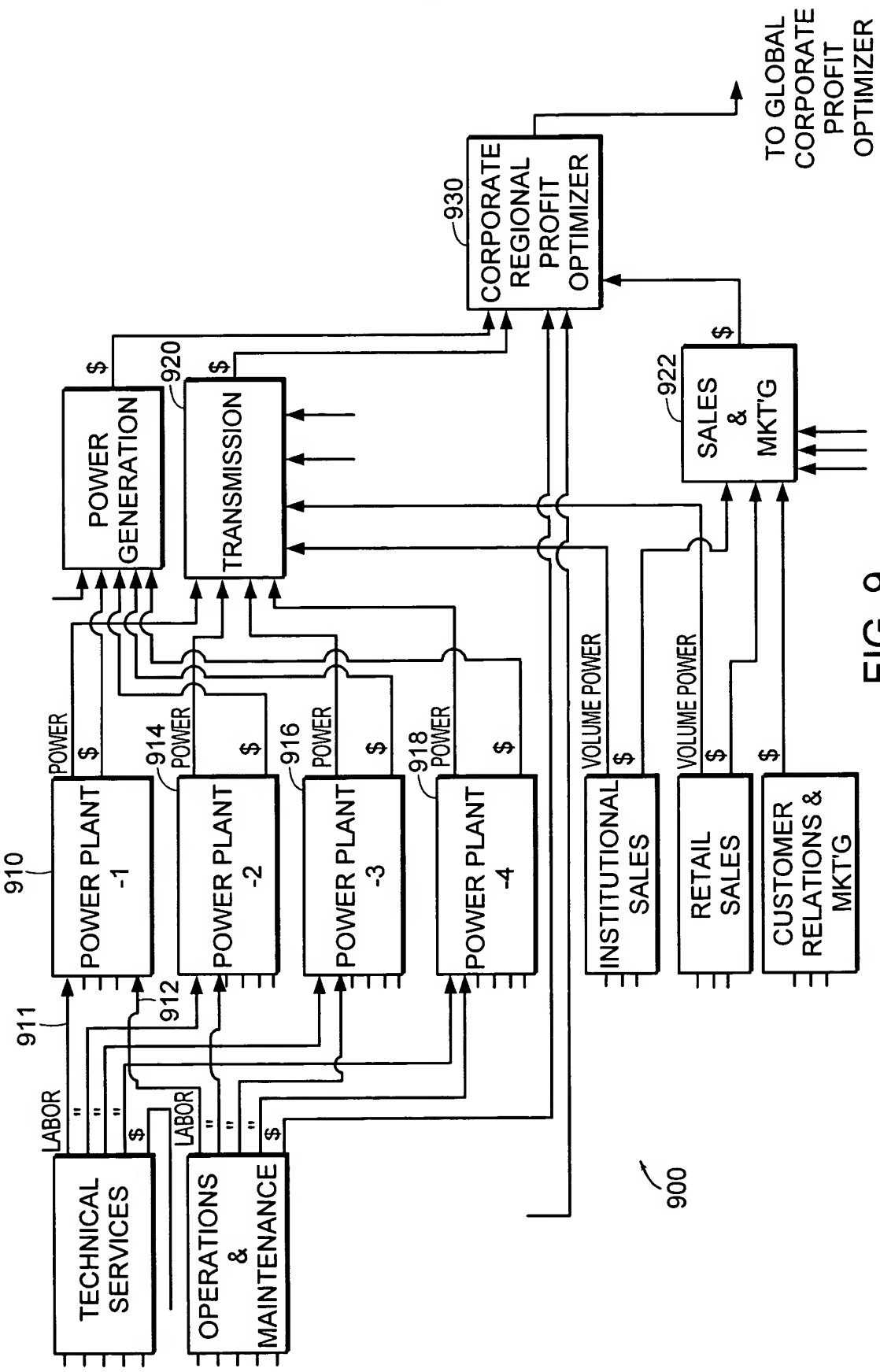
TO GLOBAL CORPORATE PROFIT OPTIMIZER
930
CORPORATE REGIONAL PROFIT OPTIMIZER
920
TRANSMISSION
POWER GENERATION
922
SALES & MKT'G
910
POWER PLANT -1
914
POWER PLANT -2
916
POWER PLANT -3
918
POWER PLANT -4
INSTITUTIONAL SALES
RETAIL SALES
CUSTOMER RELATIONS & MKT'G
TECHNICAL SERVICES
OPERATIONS & MAINTENANCE
LABOR
POWER
VOLUME POWER
$
"
911
912
900

FIG. 9

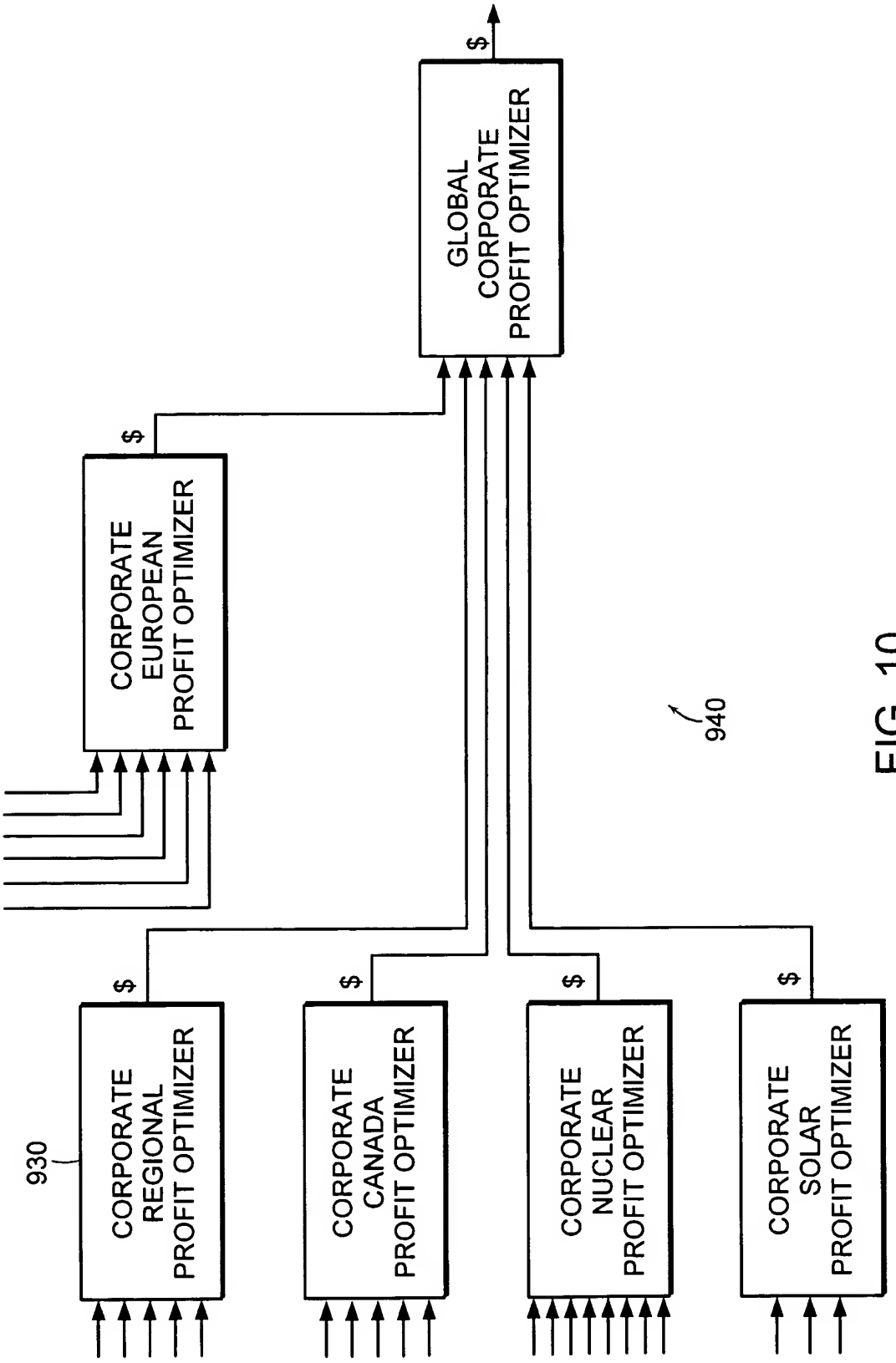
GLOBAL CORPORATE PROFIT OPTIMIZER
$
CORPORATE EUROPEAN PROFIT OPTIMIZER
$
CORPORATE REGIONAL PROFIT OPTIMIZER
$
CORPORATE CANADA PROFIT OPTIMIZER
$
CORPORATE NUCLEAR PROFIT OPTIMIZER
$
CORPORATE SOLAR PROFIT OPTIMIZER
930
940

FIG. 10

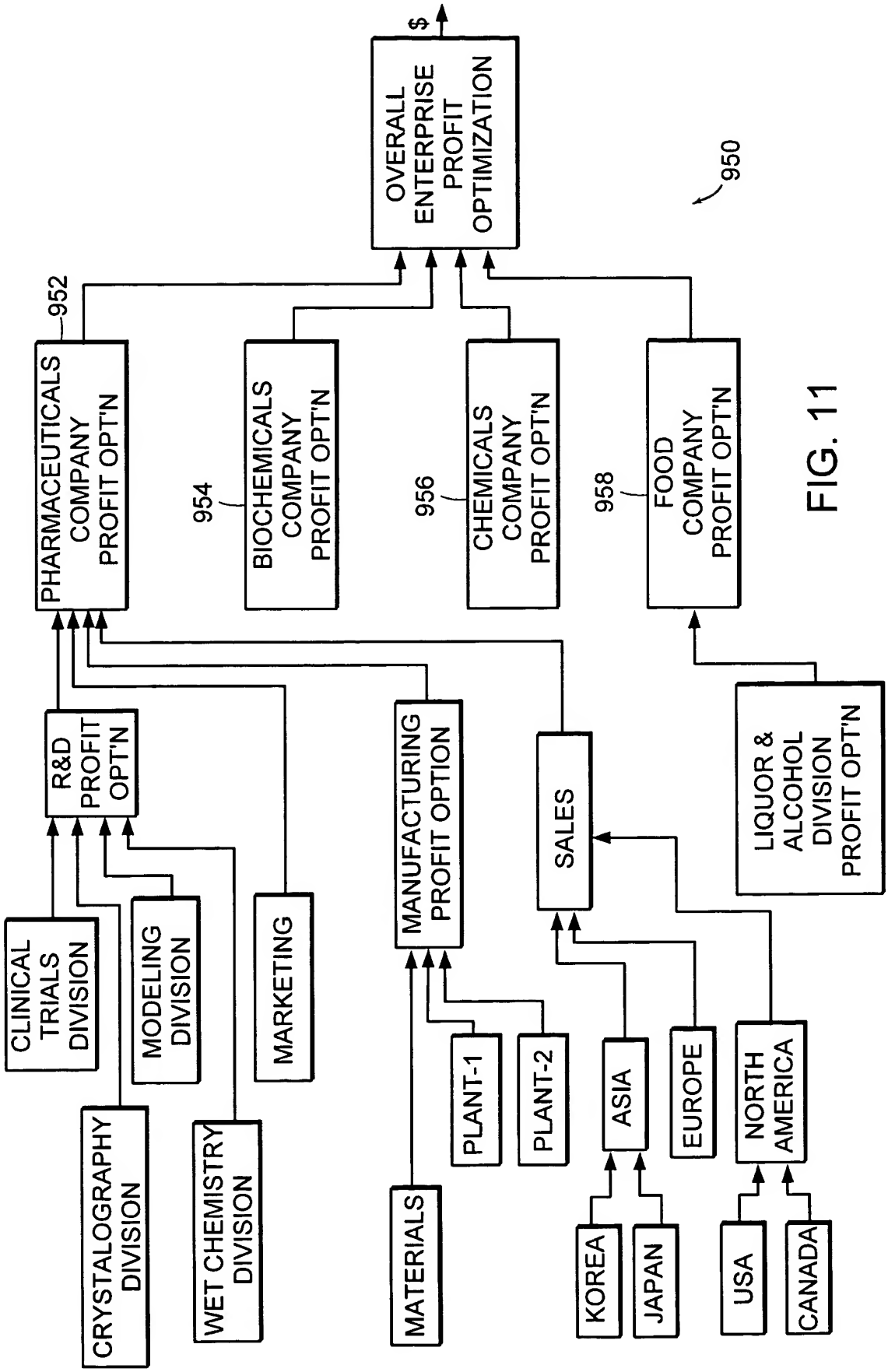
$
OVERALL ENTERPRISE PROFIT OPTIMIZATION
950
952
PHARMACEUTICALS COMPANY PROFIT OPT'N
954
BIOCHEMICALS COMPANY PROFIT OPT'N
956
CHEMICALS COMPANY PROFIT OPT'N
958
FOOD COMPANY PROFIT OPT'N
R&D PROFIT OPT'N
MANUFACTURING PROFIT OPTION
SALES
LIQUOR & ALCOHOL DIVISION PROFIT OPT'N
CLINICAL TRIALS DIVISION
MODELING DIVISION
MARKETING
CRYSTALOGRAPHY DIVISION
WET CHEMISTRY DIVISION
MATERIALS
PLANT-1
PLANT-2
ASIA
EUROPE
NORTH AMERICA
KOREA
JAPAN
USA
CANADA

FIG. 11